

## Pharmacists to improve hypertension management – guidelines concordance from North America to Europe

Daniela Anker<sup>1</sup> MSc; Ross T. Tsuyuki<sup>2</sup> BSc(Pharm), PharmD, MSc; Gilles Paradis<sup>3</sup> MD, MSc, Arnaud CHIOLERO<sup>1,3</sup> MD, PhD; Valérie Santschi<sup>4</sup> PharmD, PhD

1. Institute of Primary Health Care (BIHAM), University of Bern, Switzerland; 2. Epidemiology Coordinating and Research (EPICORE) Centre, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta; 3. Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal, Canada; 4. La Source, School of Nursing Sciences, HES-SO University of Applied Sciences and Arts of Western Switzerland, Switzerland.

### Address of correspondence

Prof. Valérie Santschi, PharmD, PhD

La Source, School of Nursing Sciences, HES-SO University of Applied Sciences and Arts Western Switzerland

Avenue Vinet 30

1004 Lausanne

Switzerland

Tel +41 21 641 38 24

Email: v.santschi@ecolelasource.ch

**Conflicts of interest and source of funding:** The authors report no specific funding in relation to this research and no conflicts of interest to disclose

**Number of words (text):** 711

## Introduction

Hypertension is highly prevalent but remains poorly controlled in Canada, the United States and European countries [1-4]. Reasons include clinical inertia, patients' limited access to health care, lack of awareness or underestimation of the importance of lifestyle factors, and nonadherence to blood pressure (BP) lowering medication [1]. Challenges exist at every level of hypertension management, and accordingly, solutions for improving hypertension control rates should be multilevel.

One innovative solution for improving hypertension care is shared care through team-based care (TBC). TBC is a coordinated model of shared care involving different healthcare professionals, such as physicians, pharmacists, nurses, or other health care professionals, working in collaborative partnership, each with their own expertise [5]. An important member of the team is the pharmacist who is a valuable asset to improve hypertension management given his accessibility and drug therapy expertise [6]. Several meta-analyses of randomized trials have shown significant reductions in BP when pharmacists were involved compared to usual care [7-9]. In addition, pharmacist-led interventions appear to be cost-effective. Indeed, Marra et al showed a net cost *savings* of \$CDN 15.7 billion if only 50% of Canadians had their hypertension care provided by a prescribing pharmacist, compared to usual care [10-12]. Recent guidelines on hypertension management, notably the 2017 Guidelines from the American College of Cardiology Foundation and American Heart Association (ACC/AHA), recommend for the first time TBC [13]. Moreover, the ACC/AHA recommendations are in line with recent recommendations of Hypertension Canada and the European Society of Hypertension [14, 15]. In this brief review, we discuss the recommendations for TBC for hypertension management in recent American, Canadian, and European guidelines and pinpoint roles and responsibilities that fall within the scope of care provided by a pharmacist.

## Recommendations from guidelines

The 2017 ACC/AHA Guidelines for hypertension management strongly recommend TBC. These guidelines give a formal definition of TBC, identify members of the team-based care, specify patient circumstances where TBC is recommended, and define roles and responsibilities of the team at every level of hypertension management [13]. **Table 1** compares the 2017 ACC/AHA guidelines with recommendations from the 2018 Guidelines from the Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension (ESC/ESH) and Hypertension Canada's 2017 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults [14, 15]. The American ACC/AHA Guidelines emphasize TBC more than the European ESC/ESH and Hypertension Canada's 2017 Guidelines by providing a more exhaustive definition of TBC, including the composition of the team. The three guidelines assign roles and responsibilities in hypertension management on the level of the team as an entity, but no firm roles are defined for each specific member of the team. Teams can be also informal and virtual (online network).

## The pharmacist's role in the team

The ACC/AHA Guidelines give examples of the roles of each team member, particularly pharmacists. The responsibilities of pharmacists include "comprehensive medication management, which involves identification and documentation of medication-related problems, initiating, modifying, and discontinuing medication to address identified problems, and educating patients on their medication regimen" [13]. The scope of pharmacists can be broadened to almost every step of hypertension management, at the patient as well as the team organization levels. Indeed, recent systematic reviews by Santschi et al. have found that pharmacists interventions that reach beyond the scope of medication management are more effective in reducing BP compared to standard of care [8, 9]. **Table 2** compares the responsibilities and tasks of the hypertension management team as stated in the ACC/AHA and Canadian guidelines with pharmacists' interventions shown to be effective. Overall, pharmacists can be involved at the patient-level - from diagnosis to BP monitoring, and medication management - and

at the team-level for the education of patient and health care providers, and communication and organization within the team.

**Conclusion**

For the first time, American guidelines strongly recommend using TBC in hypertension management, [13] in line with European and Canadian guidelines. Pharmacists are highly valuable members in team care [6], with strong evidence that their involvement in hypertension management improves hypertension control as compared to standard of care [7, 8]. Shared care through TBC with the involvement of pharmacists should be the standard of care for hypertension.

**References**

1. Centers for Disease Control and Prevention. Vital Signs: High Blood Pressure and Cholesterol. July 23, 2013; <https://www.cdc.gov/VitalSigns/pdf/2011-02-vitalsigns.pdf>. Accessed October 8, 2018.
2. Centers for Disease Control and Prevention. Vital Signs: High Blood Pressure and Cholesterol. September 6, 2018; <https://www.cdc.gov/vitalsigns/pdf/vs-0918-million-hearts-H.pdf>. Accessed October 8, 2018.
3. Kearney PM, Whelton M, Reynolds K, Whelton PK, He J. Worldwide prevalence of hypertension: a systematic review. *J Hypertens*. 2004;22(1):11-9.
4. Olsen MH, Angell SY, Asma S, Boutouyrie P, Burger D, Chirinos JA, et al. A call to action and a lifecourse strategy to address the global burden of raised blood pressure on current and future generations: the Lancet Commission on hypertension. *Lancet*. 2016;388(10060):2665-712.
5. Chisholm-Burns MA, Kim Lee J, Spivey CA, Slack M, Herrier RN, Hall-Lipsy E, et al. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. *Med Care*. 2010;48(10):923-33.
6. Santschi V, Tsuyuki RT, Paradis G. Evidence for pharmacist care in the management of hypertension. *Can Pharm J (Ott)*. 2015;148(1):13-6.
7. de Barra M, Scott CL, Scott NW, Johnston M, de Bruin M, Nkansah N, et al. Pharmacist services for non-hospitalised patients. *Cochrane Database Syst Rev*. 2018;9:CD013102.
8. Santschi V, Chiolerio A, Burnand B, Colosimo AL, Paradis G. Impact of pharmacist care in the management of cardiovascular disease risk factors: a systematic review and meta-analysis of randomized trials. *Arch Intern Med*. 2011;171(16):1441-53.
9. Santschi V, Chiolerio A, Colosimo AL, Platt RW, Taffe P, Burnier M, et al. Improving blood pressure control through pharmacist interventions: a meta-analysis of randomized controlled trials. *J Am Heart Assoc*. 2014;3(2):e000718.
10. Lamb SA, Al Hamarneh YN, Houle SKD, Leung AA, Tsuyuki RT. Hypertension Canada's 2017 guidelines for diagnosis, risk assessment, prevention and treatment of hypertension in adults for pharmacists: An update. *Can Pharm J (Ott)*. 2018;151(1):33-42.
11. Tsuyuki RT, Berg A, Khan NA. The ultimate opportunity for advancing pharmacy practice. *Can Pharm J (Ott)*. 2017;150(4):225-6.
12. Marra C, Johnston K, Santschi V, Tsuyuki RT. Cost-effectiveness of pharmacist care for managing hypertension in Canada. *Can Pharm J (Ott)*. 2017;150(3):184-97.
13. Whelton PK, Carey RM, Aronow WS, Casey DE, Jr., Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*. 2018;138(17):e484-e594.
14. Leung AA, Daskalopoulou SS, Dasgupta K, McBrien K, Butalia S, Zarnke KB, et al. Hypertension Canada's 2017 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults. *Can J Cardiol*. 2017;33(5):557-76.
15. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension. *J Hypertens*. 2018;36(10):1953-2041.

**Table 1.** American, European and Canadian 2017/18 recommendations regarding TBC in hypertension management

	<b>ACC/AHA 2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults [13]</b>	<b>ESC/ESH 2018 Guidelines for the management of arterial hypertension [15]</b>	<b>Hypertension Canada's 2017 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults [14]</b>
Members of the care team	TBC for hypertension includes the <b>patient, the patient's primary care provider, and other professionals, such as cardiologists, nurses, pharmacists, physician assistants, dietitians, social workers, and community health workers</b> . These professionals complement the activities of the primary care provider by providing process support and sharing the responsibilities of hypertension care.	No explicit definition of TBC, but guidelines mention that collaboration [of physician] with other healthcare providers, especially <b>nurses and pharmacists</b> may improve drug adherence in hypertension.	No explicit definition of TBC, but guidelines recommend both involving the <b>patients</b> in their treatment to improve adherence and coordinating with <b>pharmacists and work-site health care givers</b> to improve monitoring of adherence with pharmacological and lifestyle modification prescriptions.
Formal definition of TBC in Management of hypertension	<b>TBC</b> to improve BP control is a health <b>systems–level, organizational intervention</b> that incorporates a <b>multidisciplinary team</b> to improve the quality of hypertension care for patients.	No explicit definition.	No explicit definition.
Steps in Management of hypertension, where TBC is recommended	A TBC approach is patient centered and is frequently implemented as part of a multifaceted approach, with systems support for <b>clinical decision making (i.e., treatment algorithms), collaboration, adherence to prescribed regimen, BP monitoring, and patient self-management</b> . Follow-up and monitoring after initiation of drug therapy for hypertension control should include systematic strategies to help improve BP, including use of HBPM, TBC, and telehealth strategies.	[...] nurses and pharmacists [have an important role] in the <b>education, support, and follow-up of treated hypertensive patients</b> (part of the overall strategy to improve BP control). Increasing the integration among healthcare providers with the involvement of pharmacists and nurses increases drug <b>adherence</b> .	A multidisciplinary team approach is recommended for improving <b>adherence to an antihypertensive prescription</b> and in <b>strategies targeting weight loss</b> (dietary education, increased physical activity, and behavioural intervention).
Specific patient-situations, where TBC is specifically recommended		No recommendation.	No recommendation.

- |   |   |
|---|---|
| (1) patients who do not respond to or do not tolerate treatment with several medications                                  | Working with this more demanding subset requires provider expertise, patience, and a mechanism to respond efficiently and sensitively to concerns as they arise. In this setting, TBC may be effective, encouraging <b>coupling of non-pharmacological and pharmacological treatments</b> , while improving <b>access to and communication with care providers</b> .  |
| (2) older adults ( $\geq 65$ years of age) with hypertension and a high burden of comorbidity and limited life expectancy | [...] clinical judgment, patient preference, and a TBC approach to <b>assess risk/benefit is reasonable for decisions regarding intensity of BP lowering and choice of antihypertensive drugs</b> .   |
| (3) Resource-constrained populations  | It is crucial to invest in measures to enhance health <b>literacy</b> and reinforce the importance of <b>adhering</b> to treatment strategies, while paying attention to cultural sensitivities. These measures may include identification of and partnering with community resources and organizations devoted to hypertension control and cardiovascular health. Although comparative-effectiveness data documenting efficacy of various interventions are limited, multidisciplinary team-based approaches and the use of community health workers have shown some utility, as has the use of out-of office BP monitoring (or no-cost BP control visits), particularly among resource-constrained populations. |

---

**Abbreviations:** ACC/AHA, American College of Cardiology Foundation and American Heart Association; ESH/ESC, the Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension; TBC: team-based care; BP: blood pressure; HBPM, home blood pressure monitoring.

**Table 2.** Responsibilities and tasks in hypertension management that can be assigned to a multidisciplinary team in recent American and Canadian Guidelines compared to roles of pharmacists that have been shown to be effective in managing hypertension

<b>Level in hypertension management</b>	<b>Responsibilities of a team as recommended in the ACC/AHA Guidelines 2017 [13]</b>	<b>Tasks of a team as recommended in the Hypertension Canada's 2017 Guidelines [14]</b>	<b>Pharmacists' interventions shown effective in systematic reviews [8, 9]</b>
Role in managing BP and hypertension on a patient-level			
Measurement and diagnosis of hypertension	Effective use of evidence-based diagnosis and management guidelines.	Health care professionals who have been specifically trained to measure BP accurately should assess BP in all adult patients at all appropriate visits to determine cardiovascular risk and monitor antihypertensive treatment.	Measurement of BP, hypertension staging and risk of stratification, and reviewing of home BP measurements.
Medication management	Medication addition and titration using evidence-based treatment algorithms.	Tailoring pill-taking to fit patient's daily habits simplifying to once-daily dosing, single pill combinations and unit-of-use packaging (of several medications to be taken together).	Medication management (including drug monitoring with adjustment or change in medication).
BP monitoring and follow-up aids on adherence	Regular, structured follow-up mechanisms and reminder systems to monitor patient progress. Follow a single, personalized plan of care based upon patient characteristics and needs.	Assessing adherence to pharmacological and nonpharmacological therapy at every visit. Encouraging adherence with therapy by out-of-office contact (phone or mail). Utilizing electronic medication compliance aids. Coordination with pharmacists and work-site health care givers to improve monitoring of adherence with pharmacological and lifestyle modification prescriptions.	Reminder system (including telephone contact, web services, home visits, or drug adherence aid).
Roles in organizing hypertension management on a team-level			
Communication and coordination	Communication and care coordination among various team members, the patient	No recommendation.	Feedback to healthcare professional (including drug-

within the care team	and family members or other support persons.		related problems identification; recommendation to physician for medication change; team meeting, development of treatment plan).
Education and counseling of patient	Medication adherence support and appropriate education about hypertension medication. Engage patients in their care by shared decision making. Use of evidence-based tools and resources designed to maximize self-management (including health behavior change, lifestyle modification, etc.).	Increasing patient involvement in their treatment by encouraging greater patient responsibility/autonomy in monitoring their BP and adjusting their prescriptions. Educating patients and their families about their disease and treatment regimens. Being involved in weight loss strategies including dietary education, counseling on physical activity, and performing behavioral interventions.	Patient education and counseling about lifestyle, medication and medication adherence.
Education of health care professional	No recommendation.	No recommendation.	Healthcare professional education (including training program).

---

**Abbreviation.** ACC/AHA, American College of Cardiology Foundation and American Heart Association; TBC: team-based care; BP: blood pressure.